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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,273	03/13/2001	Wenge Yang	9076/463	1234

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03/31/2003

WAGNER, MURABITO & HAO LLP
TWO NORTH MARKET STREET
THIRD FLOOR
SAN JOSE, CA 95113

EXAMINER

ESTRADA, MICHELLE

ART UNIT PAPER NUMBER

2823

DATE MAILED: 03/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/805,273

Applicant(s)

YANG, WENG

Examiner

Michelle Estrada

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 and 27-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 21-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Invention I (claims 1-16 and 21-26) in Paper No. 8 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-16, 21 and 23-26 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yoshigai et al. (6,191,045) and Mui et al. (6,037,265).

Yoshigai et al. disclose etching away portions of a conductive layer (202) on a substrate (205) with a plasma, wherein said conductive layer is adhered to said substrate by an adhesive layer (204); wherein the adhesive layer comprises polysilicon, and said conductive layer comprises tungsten (Col. 3, lines 35-37); wherein the substrate comprises silicon oxide (205); wherein the plasma comprises chlorine atoms; wherein the plasma comprises chlorine atoms and oxygen atoms (Col. 3, lines 60-65); making a semiconductor structure and making a semiconductor device comprising said semiconductor structure; wherein said semiconductor device is a non-volatile memory; wherein the adhesive layer is on a substrate.

Yoshigai et al. do not disclose that the adhesive layer is specifically 500 angstroms in thickness; and that the conductive layer and said adhesive layer after etching have a combined thickness of at most 3000 Å or 2600 Å.

Mui et al. disclose that an adhesive layer (16) has a thickness typically from 300 Å to about 8000 Å, the thickness of (16) would depend upon the end use of the semiconductor, which is to contain layer (16) Col. 6, lines 6-10). Mui et al. disclose a thickness range that overlaps the thickness recited in claim 1; wherein said conductive layer and said adhesive layer after etching have a combined thickness of at most 3000 Å, this would depend on the thickness chosen for the polysilicon layer and the conductive layer; wherein said conductive layer and said adhesive layer after etching have a combined thickness of at most 2600 Å; making a semiconductor device and forming an electrical device comprising said semiconductor device

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Yoshigai et al. and Mui et al. to enable formation of the adhesive layer.

Choice of a particular thickness of the adhesive layer, the combined thickness of the conductive layer and the adhesive layer, the pressure, flow rates of chlorine gas and oxygen gas, plasma source flux power and the plasma bias power would have been a matter of routine optimization. See MPEP 2144.05.

Claims 2 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yoshigai et al. and Mui et al. as applied to claims 1, 3-16, 21 and 23-26 above, and further in view of Kugimiya et al. (6,277,763).

The combination does not disclose that the plasma is formed by a decoupled plasma source.

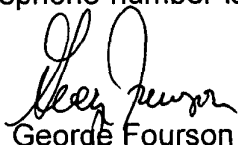
Kugimiya et al. disclose plasma etching a tungsten layer (414) and an adhesive layer (420) using a Decoupled Plasma Source System (Col. 2, lines 57-61).

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Yoshigai et al., Mui et al. and Kugimiya et al. to achieve the plasma-etching step of the combination.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is (703) 308-0729. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


George Fourson
Primary Examiner
Art Unit 2823


MEstrada
March 19, 2003